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ABSTRACT

Telecommunications applications are becoming increasingly prevalent in schools at all levels. Teachers and students studying to become teachers must be knowledgeable about technology, its applications, and how it will affect instruction now and in the future. A survey of approximately 500 public K-12 schools in North Carolina was conducted to determine the current use of technology, especially telecommunications applications, in schools, including the extent to which respondents have developed and implemented plans that incorporate technology applications into school programs and courses, the equipment that is used in teaching technology courses, and how technology is used for curriculum development. The survey achieved a 54.5% return rate (n=272). Highlights of respondents' answers revealed that: (1) 99% reported that their school district has a technology plan; (2) 80% have short-term objectives for telecommunications; (3) 42% have conducted a needs assessment to determine readiness for telecommunications applications; (4) 53% indicated lack of funds to purchase needed hardware and software; (5) 18% of elementary and 66% of high schools reported six or more computers with printers per classroom; (6) computer labs are available to students in 95% of responding schools; and (7) while 69% of schools have a private telecommunications line, only 22% of respondents are connected with the North Carolina Information Highway. Additional results are discussed. (Author/SWC)

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TELECOMMUNICATIONS: DOES IT MAKE A DIFFERENCE IN THE CLASSROOM?

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TELECOMMUNICATIONS: DOES IT MAKE A DIFFERENCE IN THE CLASSROOM?

The present era is often called "The Information Age," and one of the impressive things about technology and computers is the flexibility of teachers to access information and make decisions. Schools differ one from another, even in the same school district. Some schools are highly involved in technology; others are not. However, nowhere is change more evident than in schools today.

The impact of the computer on schools is far reaching. One area in which constant change in schools is inevitable is telecommunications. Telecommunications applications are becoming increasingly present in public schools, community colleges, and four-year institutions. Teachers and students studying to become teachers must be knowledgeable about technology, including telecommunications, and its applications, and how it will affect the way they instruct their students now and in the future.

Purpose and Objectives:

The overall purpose of this study is to determine the current use of technology applications--especially telecommunications applications--in public schools. The study revealed to what extent the survey participants have developed and implemented plans to incorporate technology applications into their school programs and courses, what equipment is being used in teaching various technology courses, and how technology is being used in developing their curriculum.

Specifically the objectives of this research were to:

1. Gather data on the processes used by public schools in planning technology applications.

2. Gather data on the types of resources available in public schools to faculty and students in classrooms, computer labs and media centers.

Methodology:

This study was conducted by mailing questionnaires to approximately 500 public schools grades K-12 in North Carolina. This sample was randomly selected and is representative of the parent population of all public schools in North Carolina.

The instrument used in this study consisted of questions asking for certain demographic information such as the size of the school district, level of classes, and types of applications taught. The survey also contained questions on the type of training available to teachers who teach technology applications; the funding sources available to purchase equipment needed to teach these applications; the types of problems and obstacles likely to be encountered; and the types of faculty resources, classroom resources, and computer lab/media center resources available in the schools.

The questionnaires were mailed during late spring of 1996, and 272 of the returned questionnaires contained complete and usable data. This number represented a 54.5 percent return rate. The responses on each questionnaire item were tabulated in frequencies and/or percentages, and data analysis was completed in September of 1996.

Findings:

Of the 272 usable questionnaires received from schools, 171 represented elementary schools, 69 represented middle schools, and 32 represented high schools. Of the total respondents 99 percent reported that their school district had a technology plan, 80 percent had short-term goals or objectives for telecommunications, and 42 percent had conducted some type of needs assessment to determine their readiness for telecommunications applications. Some type of ongoing training in technology is provided by 91 percent of the school districts, and 89 percent have some type of technical advisor to assist teachers with technology. Some type of funding that could be used to fund telecommunications applications was available in 61 percent of the schools.

The returned questionnaires identify a variety of problems and/or obstacles which schools encountered when attempting to bring technology to their classrooms. The more common problems cited included: lack of funds to purchase the needed hardware and software (53 percent), lack of training provided for teachers (27 percent), not enough technical support

personnel (12 percent), resistance and/or apathy of faculty to try something new (11 percent), and lack of time to access equipment (10 percent), and environmental concerns, such as not enough electrical outlets, phone lines, computer furniture (9 percent). Also mentioned were red tape with administration, no local connections to the internet, lack of administrative support, no vision or plan for implementation, lots of old and outdated equipment, and integrating technology into the standard course of study.

A variety of faculty resources are available to teachers in North Carolina public schools, but generally the equipment must be checked out by faculty. Only 28 percent of the responding schools reported a separate room set aside where faculty could use technology resources.

Summary figures of faculty resources available in schools are shown in Table 1.

Table 1

Faculty Resources Available To Schools

Descriptor	*Level of School*			
	Elementary	*Middle*	*High*	*Total*
One room set aside for faculty use of technology	28%	20%	28%	28%
Computer workstation with multimedia/interactive capability	72%	74%	75%	72%
Three or more computers with a printer for each	61%	58%	78%	71%
Internet access	70%	64%	81%	71%
Computer workstation with printer networked to central file server	56%	58%	75%	60%
TV monitor and VCR for checkout by faculty	89%	90%	94%	90%
LCD panel(s) for checkout to faculty	32%	39%	50%	37%
Video laser disc player for checkout to faculty	75%	67%	72%	73%

Classrooms (excluding computer labs) are reasonably well equipped for technology uses. Elementary schools have fewer computer stations per classroom. Only 18 percent of the elementary schools responding to this survey reported having six or more computers with printers per classroom while 66 percent of high schools reported six or more computers with printers. Seventy-two percent of middle schools reported a computer network system for

classroom computers while only 46 percent of elementary schools and 59 percent of high schools have a computer network for classroom computers.

Summary figures of classroom resources available to students and teachers in schools are shown in Table 2.

Table 2
Classroom Resources Available in School

Descriptor	*Level of School*			
	Elementary	*Middle*	*High*	*Total*
One computer and printer	63%	75%	63%	66%
Two to five computers	47%	58%	44%	49%
Two to five computers with a printer available to each	26%	33%	53%	31%
Six or more computers	13%	23%	47%	20%
Six or more computers with a printer available to each	19%	22%	66%	25%
Computer network system	46%	72%	59%	54%
TV monitor and VCR	79%	80%	78%	79%
Overhead projector and wall mounted screen	82%	81%	75%	81%

North Carolina schools have well equipped computer labs and/or media centers. Responses to this study indicate that computers labs are available to students in 95 percent of the schools. The most common telecommunications resources available are: private telecommunications line, modem, and software (69 percent of schools) and automated catalog and circulation system (72 percent of schools). However, only 22 percent of respondents reported being connected to the North Carolina Information Highway.

Summary figures of resources available to students and teachers in computer labs and/or media centers in schools are shown in Table 3.

Table 3

Computer Lab and/or Media Center Resources Available in Schools

Descriptor	*Level of School*			
	Elementary	*Middle*	*High*	*Total*
Computer workstations available to students	95%	94%	94%	95%
Multimedia workstations available to students	76%	86%	91%	80%
Computer network system	65%	67%	84%	69%
LCD projection system	30%	42%	47%	36%
Private telecommunications line, modem, and software	69%	65%	72%	69%
Subscription to electronic bulletin board service	32%	26%	38%	30%
Subscription to external database(s)	12%	16%	25%	13%
Automated catalog and circulation system	70%	75%	84%	72%
Computer workstation(s) with reference sources	70%	70%	75%	72%
Video laser disc player	70%	74%	69%	72%
Master antenna distribution system (MATV) with access to open-air broadcasters and/or satellite delivered resources	33%	28%	44%	35%
Video projector for large group use	30%	23%	28%	27%
Camcorder with tripod, lights, and wireless mike	65%	81%	72%	71%
Connection to NC information highway	20%	23%	28%	22%

Conclusions and recommendations:

The information gathered by this study will be used to update technology courses and to instruct students studying to be teachers in public schools. These courses should reflect the most recent technological advances, but should also reflect the classroom environments in which students will teach.

The results of this study may impact the content of technology courses taught, including courses taught at teacher preparation universities which deal with methods, administration, and supervision in education. Data provided by this study may be used by teachers and students studying to become teachers to make them more aware of the need to utilize computers in teaching. Prospective teachers need to understand how technology can affect the way students are instructed in the future.

Teacher preparation programs should concentrate on teaching generic technology

concepts to students which will enable them to teach when they enter the classroom. A basic, general understanding of telecommunication applications which will aid instruction in a variety of classes is of primary importance to students rather than learning specific facts which may or may not be used when the students are employed as teachers.